

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 3 [Preliminary Amendment (Accompanying Divisional Application
Under 37 C.F.R. § 1.53(b)) --- January 23, 2004]

PLEASE AMEND THIS APPLICATION AS FOLLOWS:

In The Title:

Change the title of the invention to:

-- NOVEL CHEMILUMINESCENT REAGENTS --

In The Claims:

Please cancel claim 1.

Please add new claims 287-302 as follows:

Claim 1 (Canceled Herein)

Claims 2-286 (Previously Canceled)

Stavrianopoulos et al.

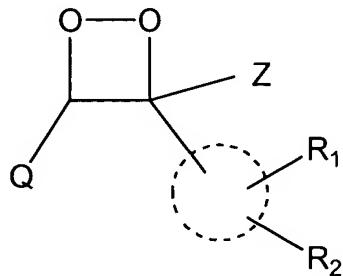
Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 4 [Preliminary Amendment (Accompanying Divisional Application
Under 37 C.F.R. §1.53(b)) --- January 23, 2004]

287. (NEW) A chemiluminescent reagent having the structure:



wherein Q comprises a cycloalkyl or polycycloalkyl group attached covalently to the 4-membered ring portion of said dioxetane above directly or indirectly through a linkage group; wherein Z comprises hydrogen, alkyl, aryl, aralkyl, alkaryl, heteroalkyl, heteroaryl, cycloalkyl or cycloheteroalkyl; and wherein R₁ and R₂ comprise chemical moieties attached to different sites of a cyclic ring attached to said dioxetane, and wherein R₁ is enzymatically converted into R₁* which comprises a chemical reactive group G₁, and wherein R₂ is attached to said cyclic ring through an oxygen atom and comprises a chemical reactive group G₂ which reacts with said G₁ to convert said dioxetane to an unstable light-emitting dioxetane form.

288. (NEW) The chemiluminescent reagent of claim 287, wherein said Q comprises an adamantyl group.

289. (NEW) The chemiluminescent reagent of claim 287, wherein said cyclic ring comprises an aromatic ring.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 5 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 23, 2004]

290. (NEW) The chemiluminescent reagent of claim 287, wherein R_2 comprises a substituted or unsubstituted aliphatic group or an unsubstituted aromatic group.

291. (NEW) The chemiluminescent reagent of claim 290, wherein said substituted aliphatic group comprises halogen, nitrates, sulfonates or nitrites.

292. (NEW) The chemiluminescent reagent of claim 287, wherein enzymatically convertible R_1 comprises amides, esters, phosphates, carboxylic acids, fatty acids, glucose, xylose, fucose, or amino acids.

293. (NEW) The chemiluminescent reagent of claim 287, wherein R_1 is enzymatically converted into R_1^* through the action of enzymes comprising amidases, esterases, acetylcholinesterases, acid phosphatases, alkaline phosphatases, decarboxylases, lipases, glucosidases, xylosidases, fucosidases, trypsin or chymotrypsin.

294. (NEW) The chemiluminescent reagent of claim 287, wherein after said enzymatic conversion of R_1 to R_1^* and before said conversion of said dioxetane to the unstable light-emitting dioxetane form, an intermediate five- or six-membered ring is formed comprising a linkage between said G_1 and G_2 .

Stavrianopoulos et al.

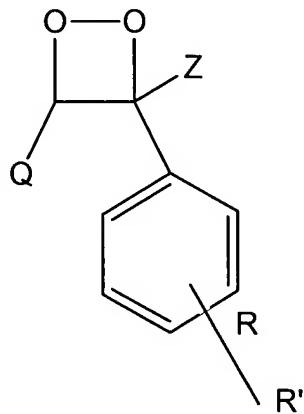
Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 6 [Preliminary Amendment (Accompanying Divisional Application
Under 37 C.F.R. §1.53(b)) --- January 23, 2004]

295. (NEW) A chemiluminescent reagent having the structure:



wherein Q comprises a cycloalkyl or polycycloalkyl group attached covalently to the 4-membered ring portion of said dioxetane above directly or indirectly through a linkage group; wherein Z comprises hydrogen, alkyl, aryl, aralkyl, alkaryl, heteroalkyl, heteroaryl, cycloalkyl or cycloheteroalkyl; and wherein R comprises a chemical linker having a reactive site attached to the aromatic ring in said structure; and wherein R' comprises a substrate for a non-cleaving enzymatic process, wherein the product of said enzymatic process leads to further chemical rearrangements that generate an unstable light emitting dioxetane form.

296. (NEW) The chemiluminescent reagent of claim 295, wherein said non-cleaving enzymatic process comprises oxidation or reduction.

297. (NEW) The chemiluminescent reagent of claim 295, wherein said Q comprises an adamantyl group.

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 7 [Preliminary Amendment (Accompanying Divisional Application

Under 37 C.F.R. §1.53(b)) --- January 23, 2004]

298. (NEW) The chemiluminescent reagent of claim 295, wherein R comprises a substituted or unsubstituted aliphatic group or an unsubstituted aromatic group.

299. (NEW) The chemiluminescent reagent of claim 298, wherein said substituted aliphatic group comprises halogen, nitrate, sulfonate or nitrite.

300. (NEW) The chemiluminescent reagent of claim 295, wherein said reactive site comprises an oxygen, a nitrogen or a sulfur atom.

301. (NEW) The chemiluminescent reagent of claim 295, wherein said enzymatic process is carried out by an enzyme comprising an oxidase or reductase.

302. (NEW) The chemiluminescent reagent of claim 295, wherein after said enzymatic process, said dioxetane is converted to an unstable light-emitting dioxetane form.

* * * * *